ARIZONA PUBLIC SERVICE

FINAL REPORT

Environmental Leadership Program
Pilot Project

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I. PURPOSE

The purpose of this document is to provide a final report on the implementation of an Environmental Management System Assessment (EMSA) tool by Arizona Public Service Company (APS) as part of the Environmental Protection Agency's (EPA) Environmental Leadership Program (ELP). The details of the ELP agreement between APS and the EPA are provided in a Memorandum of Agreement (MOA) between the parties which was signed by all involved parties in June 1995. One requirement of the MOA is the submission by APS of this Final Report to inform the public of the progress of the ELP pilot project at APS.

II. INTRODUCTION TO THE APS ELP PILOT PROJECT

Prior to the announcement by the EPA of the ELP project, APS had been in the process of developing an EMSA. The APS EMSA provides a framework for assessing the effectiveness and level of implementation of environmental management systems within an organization. APS' EMSA tool focuses on policies, standards, systems and performance measurement programs.

For the pilot ELP project, APS proposed to apply the EMSA at three facilities: the Deer Valley, Flagstaff, and Williams Service Centers. The Deer Valley Service Center represents a large facility located in Phoenix, the Flagstaff Service Center is a medium sized facility in APS' Northeast Division, and the Williams Service Center is a small facility also in APS' Northeast Division. The main purpose of the pilot project was to determine the effectiveness and usefulness of an EMSA in assessing a facility's environmental performance. Lessons learned in implementing the EMSA will help APS refine the EMSA so that the tool can be applied to all APS facilities. As for the EPA, participation in APS' implementation of the EMSA will enable EPA to gain knowledge in the implementation of environmental management systems. EPA can then create a generic environmental management systems model.

III. TASKS

A. Previous (Months 1 - 9)

The following tasks were completed during the first nine months of the project:

- Negotiated and signed a MOA with the Arizona Department of Environmental Quality (ADEQ) and US EPA.

- Hosted a meeting of the ELP team (consisting of Chris Oh, EPA Headquarters; Linda Powell, Region IX EPA, and Beverly Westgaard, ADEQ). The meeting consisted of a tour of the Deer Valley facility, an overview of environmental programs at the facility, an overview of the EMSA tool, and a discussion of the process of principle and element selection for the pilot (seven principles were selected for the pilot project).

- Developed protocols (questionnaires) for each of the selected principles. Separate questionnaires were developed for the three different audiences to be interviewed: front-line, team leaders, and managers

- Assembled and trained the audit teams to implement the EMSA.

- Conducted the EMSA at Deer Valley by interviewing employees and reviewing documentation to assess the current environmental programs for the seven elements which were selected.

- Prepared a report summarizing the Deer Valley EMSA.

- Revised the protocols to make them easier to use. Combined the three protocols (front-line, leader, and manager) into one protocol with audience designations for each question. Expanded the protocols to include additional elements.

- Scheduled and conducted an EMSA at the Flagstaff and Williams Service Centers.

- Coordinated the entire EMSA process at Flagstaff and Williams with agency representatives of the APS ELP Pilot Project team. Provided for the agency team to observe and participate in the EMSAs at these facilities.

- Provided an educational training session for facility staff at Flagstaff and Williams.

- Prepared a report summarizing the Flagstaff and Williams EMSA.

C. Current Tasks (months 9 - 12)

The following tasks were completed during the final three months of the project:

- Made further revisions to the protocols based on lessons learned during the pilot, and developed protocols for those elements which were not included in either the Deer Valley, Flagstaff and Williams assessments. The latest version of the protocol is attached (Attachment I).

- Participated in two training and outreach opportunities to share APS EMS experience. One opportunity involved a meeting of the Arizona Association of Industries; the second involved a seminar on Business and the Environment which was coordinated by the Arizona Department of Environmental Quality (ADEQ) and the Arizona State University (ASU).

- Provided mentoring on the APS EMSA experience to one industry and one municipality in the Phoenix area.

- Followed up with facilities which were evaluated to obtain their feedback on the usefulness of the EMSA.

- Monitored and assisted APS facilities in the integration of improvement opportunities identified by the EMSA.

- Prepared this final report that includes an overall assessment of the EMSA implementation, lessons learned and recommendations for improvement.

IV. EMSA TOOL DEFINED

A. History

APS, with the assistance of Deloitte and Touche, had developed an EMSA program prior to the announcement of the ELP program. The APS EMSA tool focuses on policies, standards, systems and performance measurement programs. The framework of the APS EMSA is based on internal documents and external voluntary standards. The internal sources included documents such as the APS Environmental, Health & Safety (EHS) Policy, APS' Environmental and Safety Business Cases, and APS' Corporate as well as EHS Strategic Plans. The external sources included standards from the Coalition for Environmentally Responsible Economies (CERES), the International Chamber of Commerce (ICC) Business Charter, the International Organization for Standardization (ISO) 14000, and the Global Environmental Management Initiative (GEMI). Developing an EMSA which is based on not only the national and international standards, but also internal corporate documents resulted in a customized EMSA that is the most appropriate and applicable tool for APS' use. The EMSA program was developed with the following goals in mind:

- Support the commitment to manage APS' business in a safe and environmentally responsible manner in accordance with the APS EHS Policy and the CERES principles;

- Move APS towards environmental excellence and leadership; and

- Support the commitment to action on environmental initiatives based on external principles.

B. Description

The APS EMSA program details 11 principles and 50 supporting elements. Each of these principles were determined to be necessary components of an effective environmental management system, and each supporting element describes the activities necessary to fully implement the principle. These principles and supporting elements are detailed in Table 1.

Table 1.
APS Principles and Supporting Elements

Principles	Elements
Management Commitment	• Policy and Scope • Organization • Resources • Accountability • Strategic Planning
Employee Education and Training	• General Skills Training • Manager & Professional Development
Performance and Impacts	• Research & Technology Transfer • Improvement of Programs & Services • Safety and Integrity
Facilities and Operations	• Internal Operating Standards & Practices • Employee Health & Safety • Changes in Process & Services • Facility EHS Organization & Responsibilities
Pollution Prevention and Stewardship of Natural Resources	• Design for Environmental and Environmental Impact • Energy Conservation • Waste Minimization & Management • Stewardship of Natural Resources
Risk Management	• Acquisition, Divestiture & New Activities • Site Closure Planning • Risk Evaluation & Reduction • Contractor & Supplier Performance
Emergency Preparedness	• Emergency Response Plans • Incident Tracking, Reporting, & Notification • Incident Prevention • Emergency Preparedness Training
EHS Communications	• Community Leaders • Employees • Financial Shareholders • Regulators • Customers • Environmental Organizations & Interest Groups
Marketing and Community	• Customer Service & Advice • Contractor and Supplier Priority • Technology Transfer to Industrial Sector • Technology Transfer to Public Sector • Public Policy • Contribution to Environmental Protection Programs • External Education Initiatives
Openness to Concern	• Employee Workplace Concerns • Customer Concerns • Community Concerns • Culture
Compliance, Inspection and Reporting	• Environmental. Audits • Self-Inspections • Corrective Action Implementation • Regulation and Legislative Tracking • Environmental Reporting • Progress Measurement and Program Evaluation • Recordkeeping

The EMSA program specifies a scoring scale (levels 1 - 4) to be used in evaluating stages of development of the principles and supporting elements. Each of the four performance levels represents stages of sophistication of environmental management systems, and can be described briefly as:

Level 1 - Compliance:
Compliance with all laws and regulations, and mandatory corporate standards are met, but systems are characterized by responsive, reactive efforts. Systems are informal, human-based and often employee initiated.

Level 2 - Systems Development and Implementation
Characterized by formal systems and procedures. Procedures exist and are periodically reviewed and updated. Annual planning includes setting goals consistent with applicable laws and regulations.

Level 3 - Systems Integration into General Business Function
Characterized by environmental management systems being fully integrated with other day-to-day business systems. Compensation at all levels is linked to environmental performance.

Level 4 - Desired Future State
Environmental performance is perceived to be world class. Continuous improvement of systems is performed, and the company strives for long-term sustainable development.

Scoring Summary
This method of scoring is fairly rigorous, making it difficult to achieve scores of 3 or 4. Based on Deloitte and Touche's experience with the scoring process, they state that scores between 0 - 1.5 are common. They go on to state that scores above 2 are exceptional, indicating fully-developed, integrated systems; scores above 3 are rare, indicating a total quality approach. It is also important to note that a facility (or even a company) may have different target scores for different principles and elements depending on how important they feel a particular principle is to them. For example, a facility may not feel that the Marketing and Community principle is particularly applicable or important to them, but that the Employee Education and Training principle is very important at their facility. It is also not necessary that a facility (or company) establish a target of having scores of 3s and 4s for all principles, as this obviously becomes a question of resources.

To assign an accurate score to the principles and elements detailed in the EMSA program, specific protocols were developed. A protocol consists of detailed questions pertaining to a particular principle and element. Individual questions in each protocol are specific to one or more audiences: management, team leaders, or front-line staff. Based on the responses to these questions from the three groups, the principles and elements can be accurately assessed and an appropriate score assigned. Each protocol may consist of just a few questions (e.g. 3 or 4) to 10 or more questions. While some questions may be appropriate for all audiences, other questions obviously need to be specific to just one or two of these groups. The EMSA protocol will likely always be undergoing some form of revision / enhancement, just as the internal and external documents which were used as the foundation of the APS EMSA tool continually change. Attachment I reflects the latest version of the protocol.

V. EMSA TOOL IMPLEMENTATION:

During the course of the ELP Pilot Project APS conducted EMSA evaluations at three different service centers: Deer Valley, Flagstaff, and Williams. While the Deer Valley facility represents a large organizationally-diverse facility that provides waste accumulation and disposal services for numerous smaller facilities, the Flagstaff and Williams service centers represent the smaller, more organizationally-unified facilities which exist throughout our operations. The EMSAs conducted at these facilities evaluated the following elements: Accountability, Training, Organization & Responsibility, Waste Minimization, Emergency Response Plans, Technology Transfer, Employee & Community Concerns, and Recordkeeping. The Employee and Community Concerns elements were not addressed at Deer Valley but were added for the assessments at Flagstaff and Williams.

Each EMSA was conducted by a team from the Corporate Environmental Department. Each assessment involved the review of certain documents (e.g. individual Performance Enhancement Plans {PEPs}, job descriptions, strategic plans, certain procedures, training records, etc.). The second, and most time-consuming phase of each assessment, was interviewing facility personnel on the various protocols. This generally involved the facility manager, the leaders of any group that played a significant role in the management of environmental issues at the facility, employees who are considered (either formally or informally) as environmental contacts at the facility, and a few front-line employees. The process usually involved interviewing each individual on between two to four of the protocols, although occasionally an individual would be interviewed on all of the protocols (e.g. facility manager). Based on establishing a cross section of employees to be interviewed, insuring that each protocol was addressed by at least two individuals, and reviewing the records mentioned earlier, a valid assessment of the environmental management systems at these facilities was possible.

Since this was the first time that these facilities had ever undergone an EMSA, it was discovered that some training on the purpose and procedures for conducting an EMSA was helpful. In some cases, this training was provided to a group of employees in a formal session involving the use of handouts, while in other cases this information was provided on a one-to-one basis before the interviewing process was started.

VI. EMSA TOOL EVALUATION: RESULTS DISCUSSION

The scores for each element evaluated at each of the three facilities is provided in the following table. Since they are separate facilities, scores were assigned individually to both the Flagstaff and Williams facilities. However, from a management standpoint, the two facilities are similar in that the Williams facility reports up through the management of the Flagstaff facility.

Table 2
EMSA Scores

	Flagstaff	Williams	Deer Valley
Principle 1 - Management Commitment	1.5	1.5	2

Element 1.2 Organization			
Principle 2 - Emp. Education & Training Element 2.1 - Gen. Skills Training	1.0	1.0	1.5
Principle 4 - Facilities and Operations Element 4.4 - EHS Org. & Responsibility	0.75	1.5	1.75
Principle 5 - Poll. Prev. & Stewardship Element 5.3 - Waste Min. & Management	2	2	2.5
Principle 7 - Emergency Preparedness Element 7.1 - Emergency Response	0.75	0.75	2.5
Principle 9 - Marketing & Community Element 9.3 & 9.4 - Tech. Transfer to Industry & Public	1.75	1.75	0.5
Principle 10 - Open to Concern Element 10.1 - Empl. Workplace Concerns	2	2	NA*
Principle 10 - Open to Concern Element 10.2 - Customer Concerns	1.5	1.5	NA*
Principle 11 - Compliance, Inspection, Reporting Element 11.7 - Recordkeeping	2	2	1.5

* NA = not analyzed

The results of the three assessments indicate that the environmental management systems are relatively consistent across these facilities. The differences in scores between facilities can generally be attributed to a single specific shortcoming in a particular element at a facility. This is based on the method of establishing scores under the APS and Deloitte and Touche system, which states that all of the elements of the score of a 1 must be present before the audit team can assign a score higher than a 1. Therefore, a particular facility may have many attributes of a score of a 2 or 3, but if a specific requirement for a score of 1 is not present (e.g. the element of training requires some form of knowledge transfer assessment for each training in order to achieve a score of 1), then the audit team must assign a score of less than 1. Other differences in scores may be attributed to different audit teams conducting the assessments.

One major difference between an environmental compliance audit and an EMSA is how the findings and recommendations are addressed. In a compliance audit, the findings generally relate to a specific regulatory deficiency which needs to be addressed. Typically, this results in an action plan requiring that the issues be resolved in a certain time frame. The results and recommendations of an EMSA are not specifically tied to environmental regulations, and therefore the response of a facility to recommendations is not as defined. A facility may decide that it is satisfied with the status of its implementation of certain principles or elements, but not with others. For example, facility X may decide that it is satisfied with a score of 1.5 for Marketing and Community, however, it would like to strive for a score of 4.0 for Employee Education and Training. This could result in some recommendations for improvement being implemented (in the above example the recommendations for improving Employee Education and Training), while other recommendations would either not be implemented or not be given a priority (in the example above, Marketing and Community). Since the process of implementing EMSA improvements is not regulatorily driven, the follow-up on the implementation of improvements can be achieved by a number of means. The improvements can be documented in

an action plan similar to the process for a compliance audit, or since the improvements are often more programmatic and long-term the improvements can be addressed in an annual strategic plan or business case. In either case, the important factor is to insure that the facility has evaluated the recommendations, decided on the principles or elements which it would like to improve upon, and then established a system to insure that plans are made and specific responsibilities assigned to achieve the improvements.

Since the Deer Valley EMSA was conducted in late 1995, the Environmental Services Operations (ESO) department (the group which provides direct environmental support to the Deer Valley facility) decided to address the EMS issues which were raised during their assessment in their 1996 Business Map. There are a number of items included in their Business Map which address issues raised during the Deer Valley EMSA. For example, the following details the improvement strategies for a number of the elements assessed at Deer Valley.

Element: Organization -- the improvement strategy for this area involves the establishment of an environmental oversight committee consisting of the four major departments represented at Deer Valley in order to establish and periodically review environmental performance goals.

Element: General Skills Training -- two improvement strategies for this area include: 1) The development of an environmental orientation program for new and transfer employees and for front-line leaders, and 2) More clearly identifying environmental training requirements for leaders through the use of a software program.

Element: Accountability -- two improvement strategies for this area include: 1) Increase the identification of environmental responsibilities in individual Performance Enhancement Plans (PEPs), and 2) Promote recognition for exemplary environmental performance by developing a comprehensive recognition program.

Element: Waste Minimization -- the improvement strategy for this area involves raising the general level of awareness of the need to minimize hazardous material usage by integrating purchasing, process engineering and planning groups into the hazardous material approval process.

Element: Technology Transfer -- the improvement strategy for improvement in this area involves development of an ESO Services brochure and working with Marketing, Economic Development, and Corporate Environmental to target key industries that could benefit from environmental support services.

Each of these action items were assigned to specific staff within ESO with dates established for achieving each goal.

The Flagstaff and Williams EMSA recommendations are being evaluated relative to their upcoming strategic planning process. One “quick hitter” issue raised in the Flagstaff and Williams evaluations has already been addressed, namely the development of, and training in, Fire Evacuation plans for the facilities. The Corporate Environmental department will continue to assist the Flagstaff and Williams facilities during the evaluation and development of an appropriate action plan in response to the EMSA evaluation.

VII. EVALUATION OF EMSA IMPLEMENTATION

The assessments were implemented as planned, and the improvements implemented in the process between the Deer Valley assessment and the Flagstaff and Williams assessments were:

- Providing a training session in advance of conducting the EMSA. This helped the employees being interviewed to better understand the process.

- The interviewers used more discretion in selecting and modifying questions from the protocol as appropriate. At times it was helpful to provide examples when interviewing employees in order to start the thought process, however, the desire to provide examples must be balanced with the desire to not "lead" employees during the interviews.

- Completing all interviews before assigning scores for any of the elements.

The areas of the assessment that could still be improved upon include:

- Shortening the protocol to just the essential questions. Some of the interviews were too time intensive and tended to 'wear out' both the interviewee and the interviewers. This would be particularly important when conducting a complete EMSA of all 50 elements.

- The protocol needs to be further refined to eliminate redundant and misleading questions.

- Consideration should be given to developing separate protocols for use in smaller, simpler facilities such as service centers, as compared to the larger, more complex facilities such as power plants.

- Starting the interviews with management and assigned environmental staff before interviewing those leaders with less direct environmental responsibilities and front-line people. Starting with management provides a better overall picture and would allow more targeted questions of the other leaders and front-line employees. During the Flagstaff and Williams assessments the availability of employees often dictated the order of the interviews.

- Addressing potential concerns about confidentiality. During the interview process the assessment team was not strict regarding limiting the staff present to only the interview team and the interviewee. At times an interviewee's direct supervisor was present, and the area's ESO representative was almost always present. This may not be a concern for everyone, but certain staff may not feel comfortable expressing their opinions and concerns with others present.

- Including front-line employees who will be interviewed, not just managers and leaders, in a training session on the purpose and process of an EMSA.

- Interviewing the direct environmental support representatives using the protocol for leaders, even though functionally these people may be front-line employees. Although they are organizationally front-line, they have the in-depth knowledge to respond to the questions that are generally thought to be more appropriate for leaders and managers.

- Either understanding or participating in the process of selecting front-line employees for involvement in the EMSA. It was felt that leaders could prejudicially select or ignore certain front-line employees. At a minimum, the assessment team needs to understand the basis for front-line selection; or alternatively be involved in the selection or insure that there is an element of randomness to the selection process.

- Work cooperatively with facility management in advance of the EMSA to establish the facility's priorities based on the principles.

- Seek improvement opportunities using root-cause analysis for those principles that receive relatively low scores throughout an organization.

VIII. CHANGES TO ORIGINAL SCOPE OF WORK / MOA

None

IX. VIOLATIONS / EXCEEDANCES REQUIRED TO BE REPORTED BY LAW

No regulatory agency violations or exceedances were discovered at any of the three facilities participating in the ELP Pilot Project during the period of the pilot project.

X. BENEFITS APS HAS RECEIVED FROM ELP PARTICIPATION

The primary benefit APS received from participating in the ELP Pilot Project stems from the interaction with the agency team that worked with us, and from interaction with the other participating facilities. During the Flagstaff and Williams assessments, the entire agency team was present to observe and offer comments on the APS EMSA process. By having the involvement of the agency staff in the entire process, from planning through scoring, APS received numerous constructive comments that can be used to improve our EMSA tool, and our process of conducting the EMSA. The networking with other environmental leaders from the other participating facilities during the year of the pilot project was also very helpful from the standpoint of understanding other facility perspectives (e.g. other industries, small business vs. large business, etc.), and learning from their experiences. This occurred through both direct meetings and telephone conference calls.

The Deer Valley, Flagstaff and Williams facilities received the benefit of having a relatively comprehensive EMSA conducted, which provides a good baseline assessment of the current

status, as well as providing awareness of strengths and weaknesses, and consequently insights into areas for improvement.

XI. RECOMMENDATIONS FOR FULL SCALE ELP

There has been much discussion during the Pilot Project regarding what would be required of facilities to participate in the full scale ELP versus what benefits a facility would receive from participation. Since this topic has already been discussed numerous times, we would reaffirm the big picture concept that the requirements and costs for a facility to participate must be balanced by potential benefits.

The advantages of well-designed and implemented environmental management systems are apparent, and the impending publication of the ISO 14000 series dealing with environmental management systems will likely increase the focus of attention on this issue by industry, the lending and insurance industries, and the regulatory agencies. Projects like ELP allow the EPA and certain industries to be in the forefront of this issue. One recommendation for a full-scale ELP would be to allow for increasing dialogue on this emerging issue between all participating facilities and all participating agencies. One method to accomplish this would be by establishing a series of workshops for participants (every 6 months, once per year) that would facilitate the transfer of information. These workshops could include updates from participants on their progress, experiences of facilities in pursuing ISO certification, etc. Another method to facilitate information transfer would be the publication of periodic newsletters.

APS continues to be interested in working with the EPA on the design and roll-out of the full scale ELP.

US EPA AND ADEQ JOINT COMMENTS:

The regulatory agencies greatly benefited from voluntary participation by APS in the development of the Environmental Leadership Pilot Projects. Through regulatory staff observation of the EMS implementation at the APS Deer Valley, Flagstaff and Williams facilities, EPA and ADEQ became aware of the significant amount of resources and dedication initially required to implement an EMS. In addition, through participation in the APS ELP pilot project, EPA and ADEQ recognize the core function that an EMS serves to help a company meet and maintain its business and environmental objectives.

Although the project encountered key personnel changes, the team maintained its focus and accomplished all the tasks originally designed to test an environmental management system. We contribute this success to two important factors: 1) the combined experiences, ideas, and commitments of the team members to the pilot project; and 2) the commitment, support and leadership exhibited by the APS management to participating in the ELP Pilot phase. The ELP regulatory and business members of the team built a strong sense of working trust and understanding by our joint participation. The US EPA and ADEQ are grateful to and acknowledge the substantial contributions that APS has made to the ELP development.

The experience gained from the APS ELP Pilot Project was shared with the ELP Focus Group members, consisting of industry, state, and EPA representatives charged with developing the national ELP. It is through the value of shared experience and building a common knowledge base, such as that gained on ELP Pilot projects, that the ELP Focus Groups can develop practical leadership programs. The APS EMS demonstration provided an opportunity for interested applicants and participants to measure the benefit of this component of the national ELP. The ELP demonstrated the flexibility of an EMS, sufficient to serve the needs of the different states and industries, while rigorous enough to distinguish some businesses as environmental leaders. The regulatory agencies believe that the APS EMS/ELP demonstration met the elements necessary to herald a new and an even more effective era of environmental protection.